CLAIMS

1. An apparatus for providing a uniform data signal to an elastic store, the apparatus comprising:

first and second pointer signals;

a pointer encoder receiving the first and second pointer signals and providing a composite pointer signal having a period and a magnitude;

a first filter receiving the composite pointer signal, the first filter configured and arranged to filter the magnitude of the composite pointer signal and to provide a first filtered signal;

a second filter receiving the composite pointer signal, the second filter configured and arranged to filter the period of the composite pointer signal and to provide a second filtered signal;

a bit leak rate calculator receiving the first and second filtered signals, the bit leak rate calculator configured and arranged to provide a bit leak rate value;

an offset generator receiving the bit leak rate value, the offset generator configured and arranged to provide a center offset value;

an elastic store having a plurality of storage locations at least a portion of which store data, the elastic store configured and arranged to provide an elastic store fill value indicative of the portion of storage locations containing data, the elastic store also configured and arranged to provide an elastic store center value indicative of the median storage location;

a prefilter receiving a system clock signal, the elastic store fill value, the elastic store center value, and the center offset value, the prefilter configured and arranged to provide a uniform read enable signal to the elastic store, wherein the elastic store provides as an output a plurality of more-uniformly-gapped data.

2. The apparatus of claim 1 wherein the first filter provides a first signal indicative of the magnitude of the composite pointer signal, and a second signal indicative of the average of the magnitude of the composite pointer signal.

3. The apparatus of claim 2, wherein the bit leak rate calculator receives the first signal from the first filter, wherein the bit leak rate calculator responds to bursts of the first pointer signal.

4. The apparatus of claim 1 wherein the second filter provides a first signal indicative of the period of the composite pointer signal, and a second signal indicative of the average of the period of the composite pointer signal.

5. The apparatus of claim 2 wherein the second pointer adjustment signal is a virtual tributary superframe pointer adjustment signal.

6. The apparatus of claim 2 wherein the second pointer adjustment signal is a tributary unit multiframe pointer adjustment signal.

7. The apparatus of claim 2 wherein the first pointer adjustment signal is a SONET STS-1 pointer adjustment signal.

8. The apparatus of claim 2 wherein the second pointer adjustment signal is a TUG-3 pointer adjustment signal

9. The apparatus of claim 1 wherein the prefilter includes:

an averaging module receiving the elastic store fill signal, the averaging module configured and arranged to provide a first signal indicative of the average value of the elastic store fill signal;

a narrowband rate generator receiving the first signal from the averaging module, the elastic store center value, the center offset value, and the system clock, the narrowband rate generator configured and arranged to provide as an output the uniform read enable signal.

10. The apparatus of claim 1 wherein the bit leak rate value is the first bit leak rate value and further comprising:

a bit leak rate lookup table receiving the center offset value, the bit leak rate lookup table configured

and arranged to provide a second bit leak rate value for a predetermined range of center offset values;

a rate selection module receiving the center offset value, the second bit leak rate value, the first bit leak rate value, and the elastic store fill signal, the rate selection module configured and arranged to select one of the first and second bit leak rate values and provide the selected value to the offset generator.

11. A method for providing a uniformly gapped data signal from an elastic store, the method comprising the steps of:

receiving first and second pointer adjustment signals;

forming a composite pointer adjustment signal from the first and second pointer adjustment signals;

receiving an elastic store fill value indicative of the amount of data stored in the elastic store;

receiving an elastic store center value indicative of the median storage location in the elastic store;

determining a bit leak rate value as a function of at least one characteristic of the composite pointer adjustment signal and the elastic store fill value;

determining a center offset value as a function of the elastic store fill signal, the composite pointer value, and the bit leak rate;

providing a uniformly gapped data signal as a function of the center offset value, the elastic store center value, and the elastic store fill value.

12. The method of claim 11 wherein the step of determining a bit leak rate value includes the steps of:

determining the magnitude of the composite pointer adjustment signal;

determining the average magnitude of the composite pointer adjustment signal;

determining the bit leak rate as a function of the magnitude of the composite pointer adjustment signal, the average magnitude of the composite pointer adjustment signal.

13. The method of claim 11 wherein the bit leak rate is the first bit leak rate, the method further comprising the steps of:

determining a second bit leak rate value as a function of the center offset value;

selecting between the first and second bit leak rates as a function of the elastic store fill value and the center offset value.

14. The method of claim 11 wherein the step of providing the uniformly gapped data signal includes the steps of:

determining the average value of the elastic store fill value;

generating the uniform data signal as a function of the elastic store center value, the center offset value, the average value of the elastic store fill value and the system clock.